

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
21 July 2011 (21.07.2011)(10) International Publication Number
WO 2011/087776 A1

(51) International Patent Classification:

C07D 401/04 (2006.01) **A61K 31/352** (2006.01)
C07D 401/14 (2006.01) **A61K 31/424** (2006.01)
C07D 405/14 (2006.01) **A61K 31/429** (2006.01)
C07D 417/14 (2006.01) **A61P 9/00** (2006.01)
C07D 471/04 (2006.01) **A61P 29/00** (2006.01)
C07D 471/20 (2006.01) **A61P 37/00** (2006.01)
C07D 491/20 (2006.01)

(21) International Application Number:

PCT/US2010/061484

(22) International Filing Date:

21 December 2010 (21.12.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/289,003 22 December 2009 (22.12.2009) US
 61/350,631 2 June 2010 (02.06.2010) US
 61/369,201 30 July 2010 (30.07.2010) US
 61/387,582 29 September 2010 (29.09.2010) US

(71) Applicant (for all designated States except US): **VERTEX PHARMACEUTICALS INCORPORATED**; 130 Waverly Street, Cambridge, MA 02319 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ARONOV, Alex** [US/US]; 410 Lowell Avenue, Newton, MA 02460 (US). **COME, Jon, H.** [US/US]; 23r Fairmont Street, Cambridge, MA 02139 (US). **DAVIES, Robert, J.** [GB/US]; 38 Fairview Avenue, Watertown, MA 02472 (US). **PIERCE, Albert, C.**; 295 Harvard Street, Apt. 911, Cambridge, MA 02138 (US). **WANG, Jian** [US/US]; 12 Sagamore Road, Newton, MA 02461 (US). **NANTHAKUMAR, Suganthini** [US/US]; 253 Spiers Road, Newton, MA 02459 (US). **CAO, Jingrong** [CN/US]; 45 Madison Avenue, Newton, MA 02165 (US). **BANDARAGE, Upul, K.** [US/US]; 11 Bates Road, Lexington, MA 02421 (US). **KRUEGER, Elaine** [US/US]; 3 Wyndmere Road, Milton, MA 02186 (US). **TIRAN, Amaud, Le** [US/FR]; 35 Vaille Avenue, Lexington, MA 02421 (US). **LIAO, Yusheng** [US/US]; 54 Spring Street, Lexington, MA

02421 (US). **MESSERSMITH, David** [US/US]; 16 Herbert Street, Somerville, MA 02144 (US). **COLLIER, Philip, N.** [IR/US]; 195 Binney Street, Apt. 2313, Cambridge, MA 02142 (US). **GREY, Ronald** [US/US]; 51 Twelfth Street, Attleboro, MA 02703 (US). **O'DOWD, Hardwin** [US/GB]; 21 Wormwood Street, Unit 516, Boston, MA 02210 (US). **HENDERSON, James, A.** [US/US]; 345 Franklin Street, Apt. 404, Cambridge, MA 02139 (US). **GRILLOT, Anne-Laure** [FR/US]; 4 Tannery Brook Row #15, Somerville, MA 02144 (US).

(74) Agents: **PEARSON, Daniel, A.** et al.; Vertex Pharmaceuticals Incorporated, 130 Waverly Street, Cambridge, MA 02319 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: ISOINDOLINONE INHIBITORS OF PHOSPHATIDYLINOSITOL 3-KINASE

(57) Abstract: The present invention relates to compounds useful as inhibitors of PI3K, particularly of PI3K γ . The invention also provides pharmaceutically acceptable compositions comprising said compounds and methods of using the compositions in the treatment of various disease, conditions, or disorders.



WO 2011/087776 A1